



TRICARE Data Quality Training Course

May 2010



DHSS Supports Enterprise-Wide Data Quality Efforts



Objectives

- Why data quality matters
- How our tools affect data quality
- How you can use this information in your data quality program

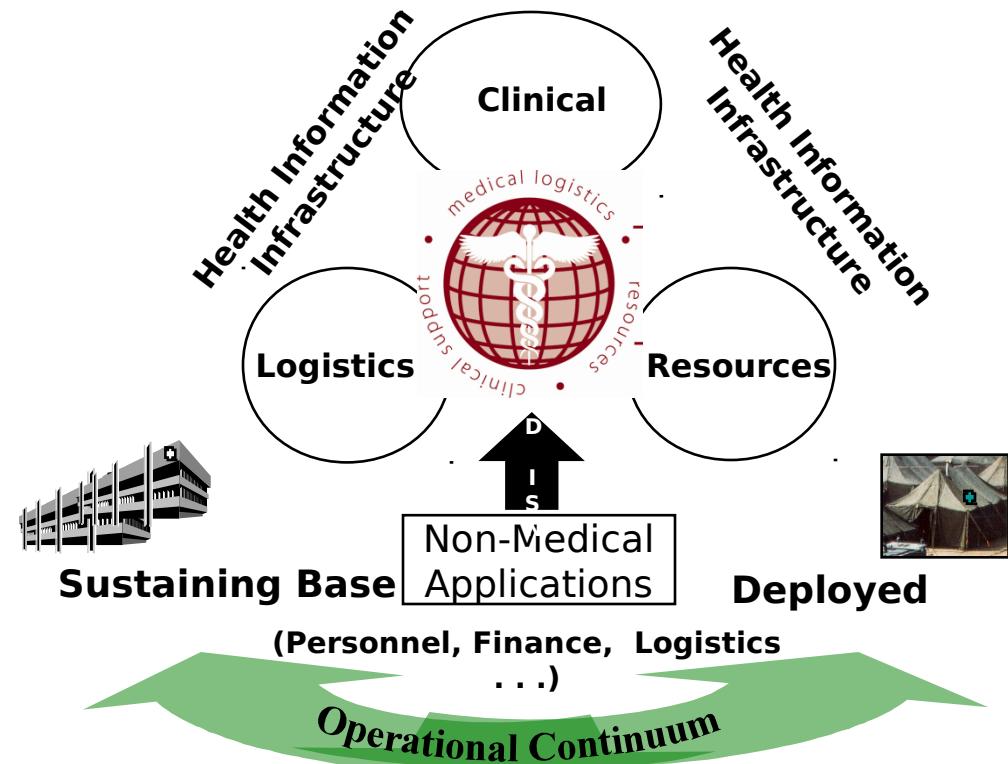
DHSS

- MHS centralized data store
- Receive, analyze, process, and store 100+ terabytes of data
- Thousands of users worldwide

What is DHSS? View

40,000 Foot

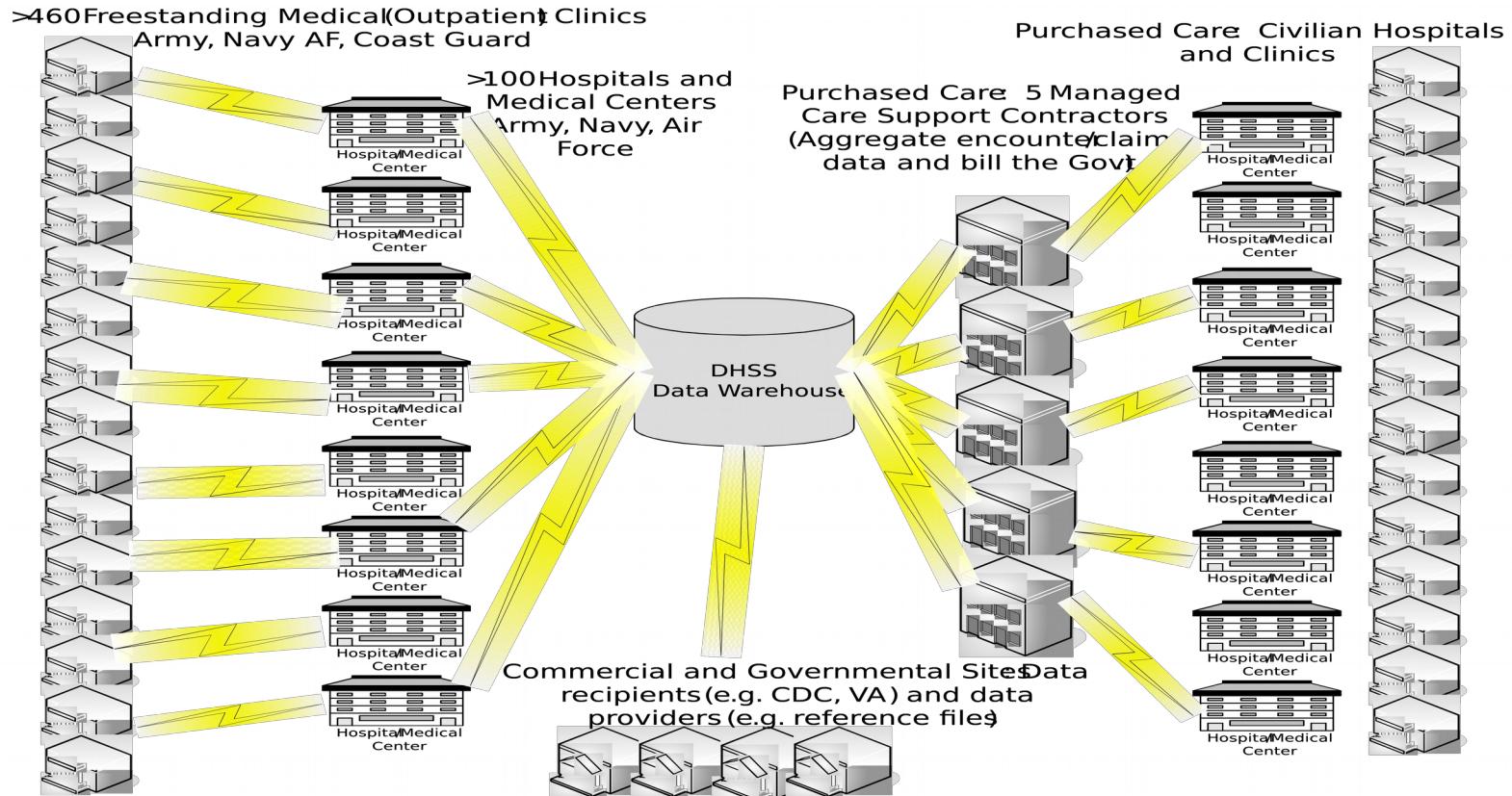
- TRICARE decision support that makes the vision of the Military Health System Plan possible
- Military Health System technology that integrates and standardizes clinical, resource, population, logistics, and other referential information



What is DHSS?

View

20,000 Foot



> 10 Million Beneficiaries

Direct (Military Provided) Care:	Inpatient: 250,000 Annually Outpatient: 30 Million Annually
Purchased (Civilian Provided) Care	Inpatient Claims: 800,000 Annually Outpatient "Claims": 100 Million Annually

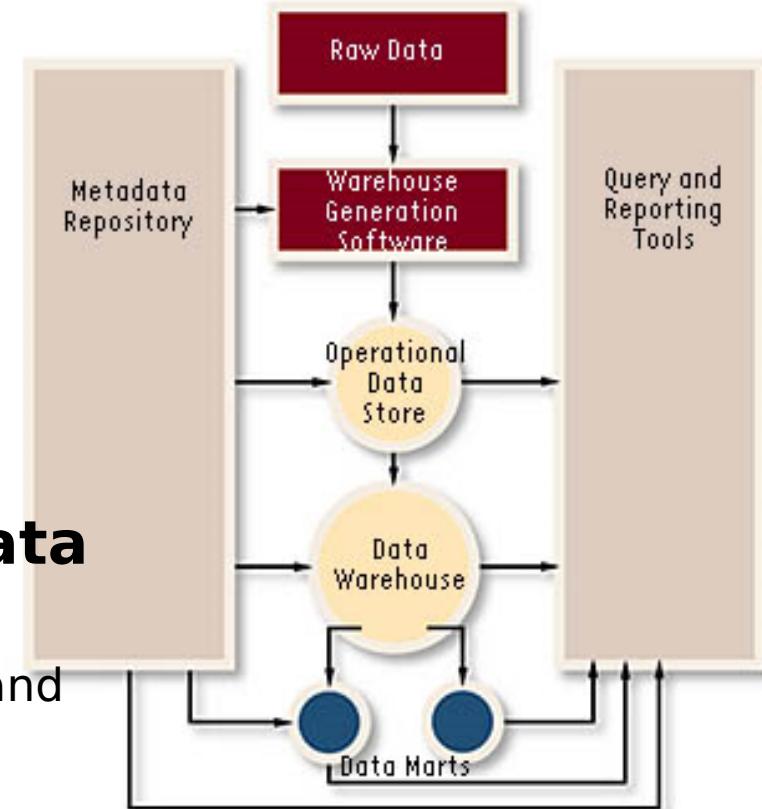
DHSS - The Healthcare Data Warehouse 5,000 Foot View

- A wide variety of healthcare data**

- Rx, Lab, Rad, etc
- Inpatient Episodes
- Outpatient Encounters
- Survey Data
- Enrollment Data
- Reference Data
- Claims Data

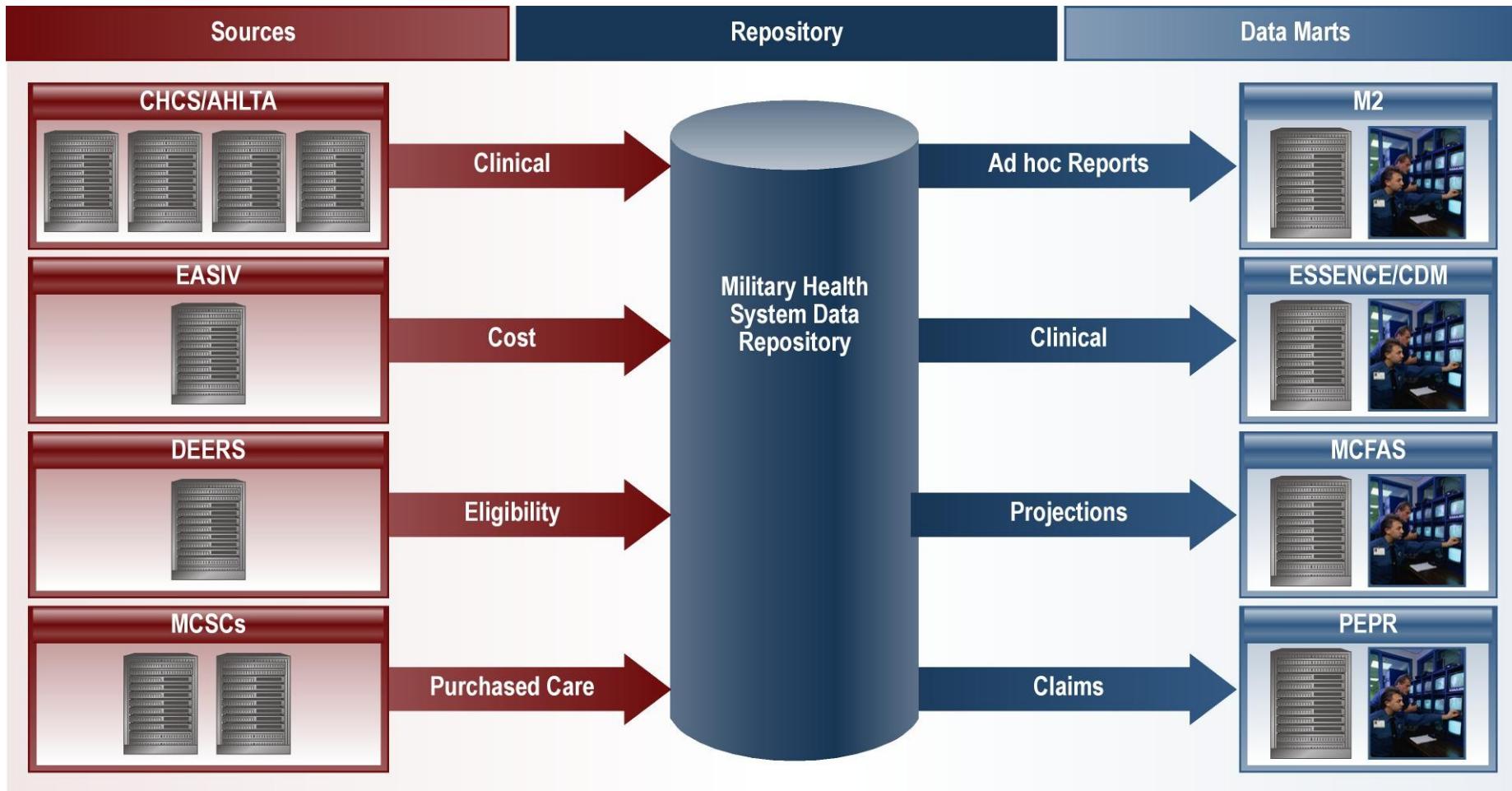
- Collects and distributes data**

- Daily, weekly, and monthly
- From over 460 freestanding clinics and 100 hospitals
- From thousands of civilian facilities
- Worldwide geographic distribution

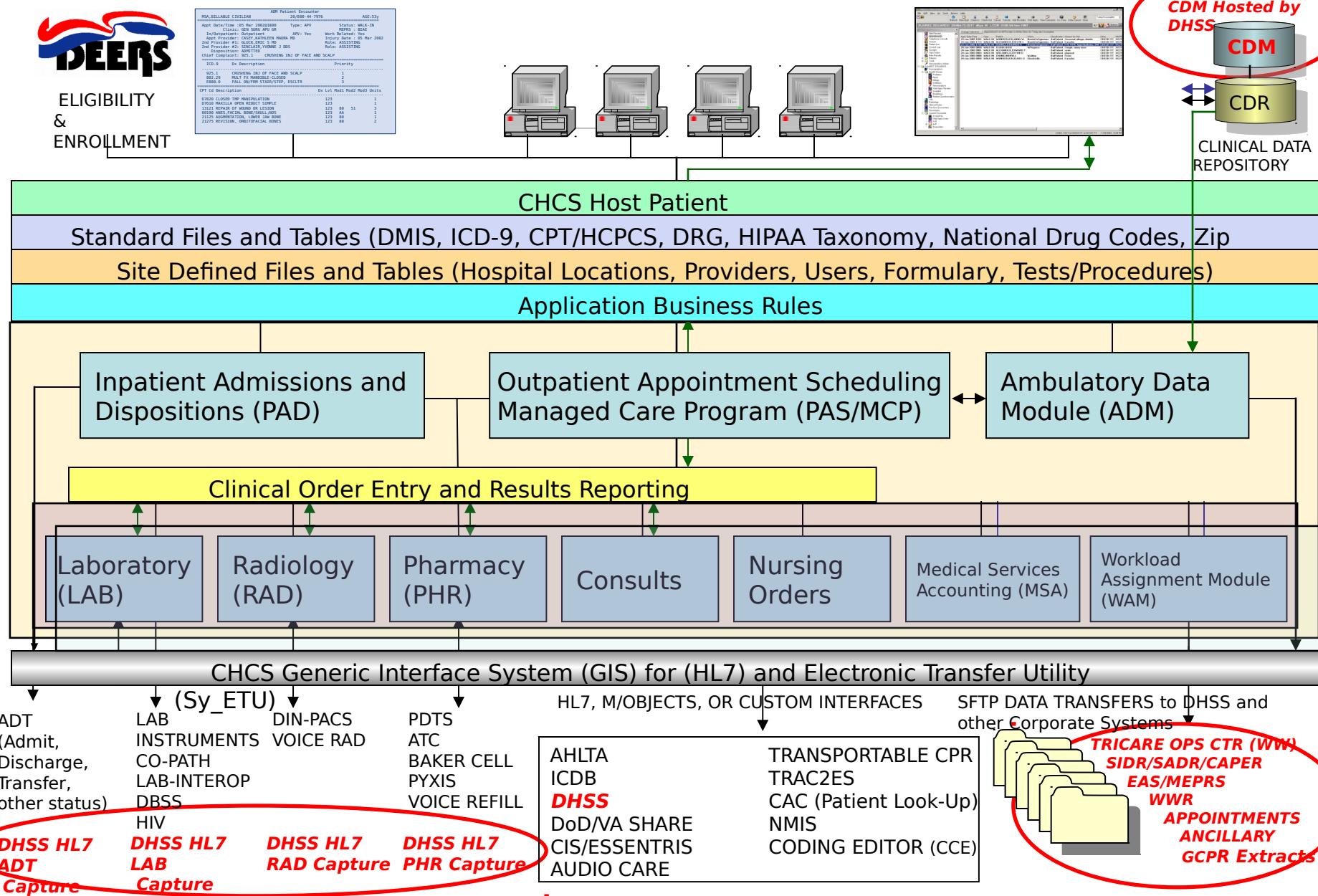


DHSS Architecture View

1,000 Foot



CHCS Host Architecture and DHSS Interfaces



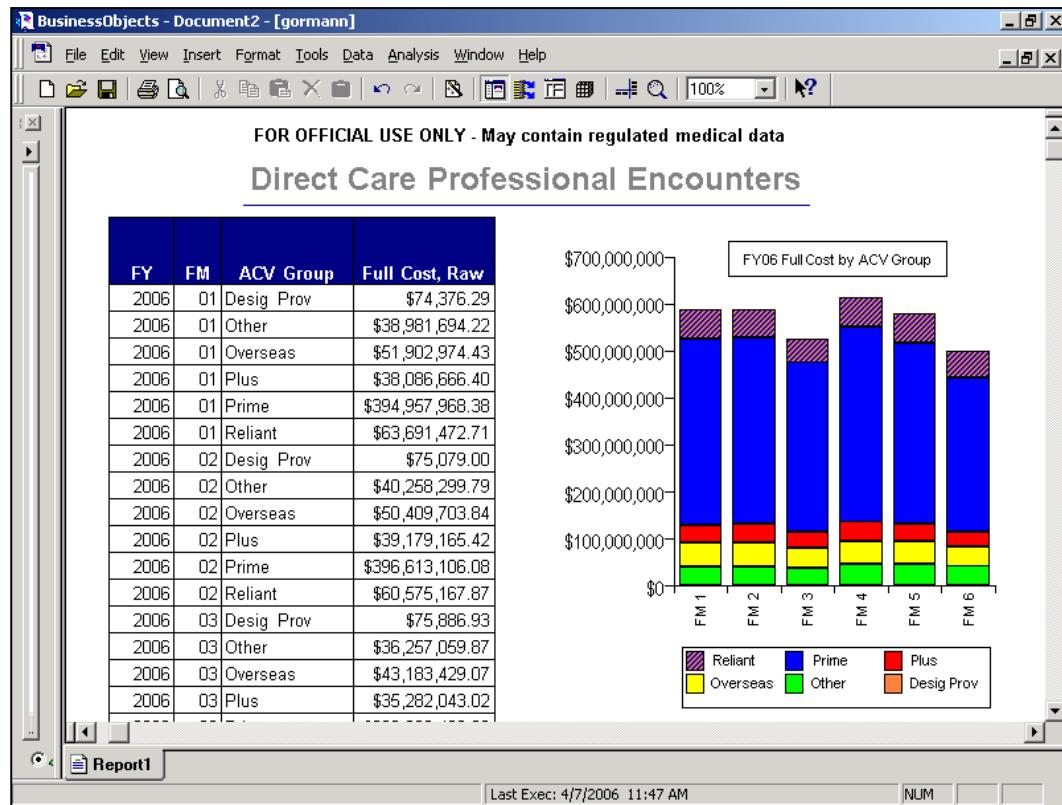
MDR (MHS Data Repository)

- Centralized data capture and validation of MHS data worldwide
- More than 5 billion records on-line with 10+ years of data
- Provides repository for other systems/applications to receive extracts
- Typical users: small cadre of high-level data analysts



M2 (MHS Management Analysis & Reporting Tool)

- Powerful ad hoc query tool for detailed trend analysis such as patient and provider profiling
- Typical users: Data analysts skilled in Business Objects software



DHSS Data Quality Requirements



- Capture and catalog data files
- Assess and monitor data completeness
- Perform data quality feed node assessments
- Develop data quality software that:
 - Performs automatic data quality checks
 - Implements data quality assessments
 - Provides metrics and manages perspective of the files' data quality

DHSS Data Quality Metrics



- Integrity: is it secure?
- Relevancy: is it appropriate?
 - Reliability: is it rationally correlated?
 - Validity: is it sound?
- Consistency: is it free from contradiction?
 - Uniqueness: is it free from duplication?
- Timeliness: is it available when needed?
- Completeness: is it whole?
- Accuracy: is it free from error?

Data Quality Tools

A decorative element consisting of two thin horizontal lines with small arrowheads pointing towards each other in the center, located below the main title.

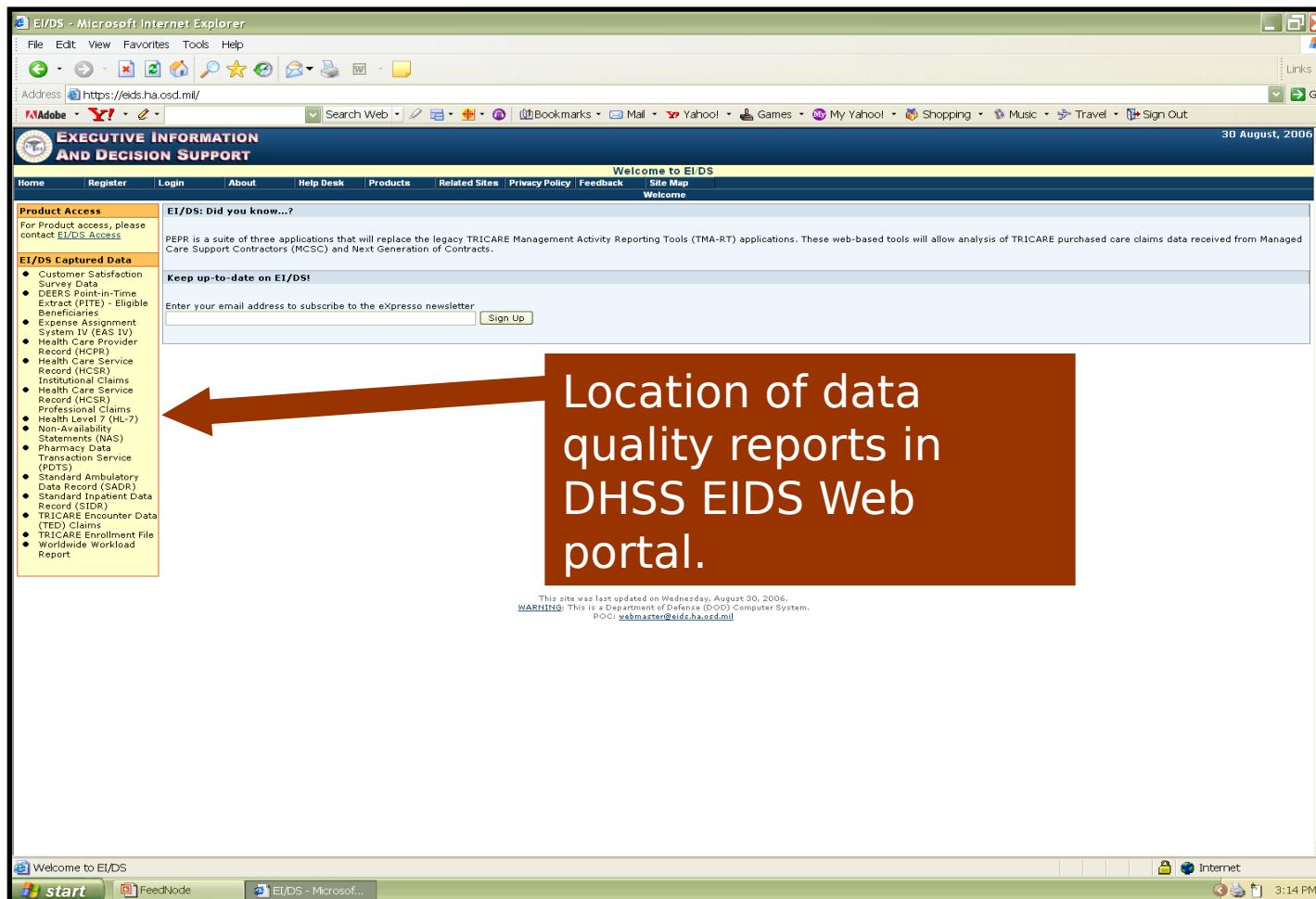
- Real-time key data quality/completeness DB2 database for:
 - SIDR SADR HL7 PDTS Appointment Ancillary
- Database updated daily and scripted to provide “event-driven” alerts via e-mail for critical data quality areas
- DMIS IDs “real time” and “snapshot” views of key data completeness measures
- INTERNAL Web front-end access for standard reports
- Multilayer data comparisons from raw to processed data for procedure-based actions
- Statistical process control algorithms and control charts to detect data anomalies

Data Tracker



- Essentially a “Mini MDR/M2”. Data processed in real time
- Data Tracker tools and reports
 - SIDR, SADR, HL7, Appointment, Ancillary, TED Inst/Non-Inst reports provide:
 - File based accounting (e.g. Gap reports)
 - Treatment based accounting (e.g. reports based on care date)
 - Timeliness reporting (e.g. lag from care rendered date to ingest)
 - Other statistical reports including benchmarking against WWR
 - Statistical Process Control Alerting for SADR anomalies
 - Other Data Tracker tools and reports
 - Monthly reports (SIDR and SADR vs WWR Benchmarking)
 - Ad Hoc Queries to the Data Tracker
 - GCPR & PDTS Gap Reports – Receipt Reports – Pull Reports
 - Current Data Tracker reports on the DHSS (EIDS) Web site
 - Daily SADR by HOST DMIS (The **“What Was Received Yesterday”** Report)
 - Daily SADR by Treatment ID – 90 Day (The daily **“90 Day Roller”** Report)
 - Monthly SIDR by Treatment DMIS

DHSS (EIDS) Web Portal Resource



Location of data quality reports in DHSS EIDS Web portal.

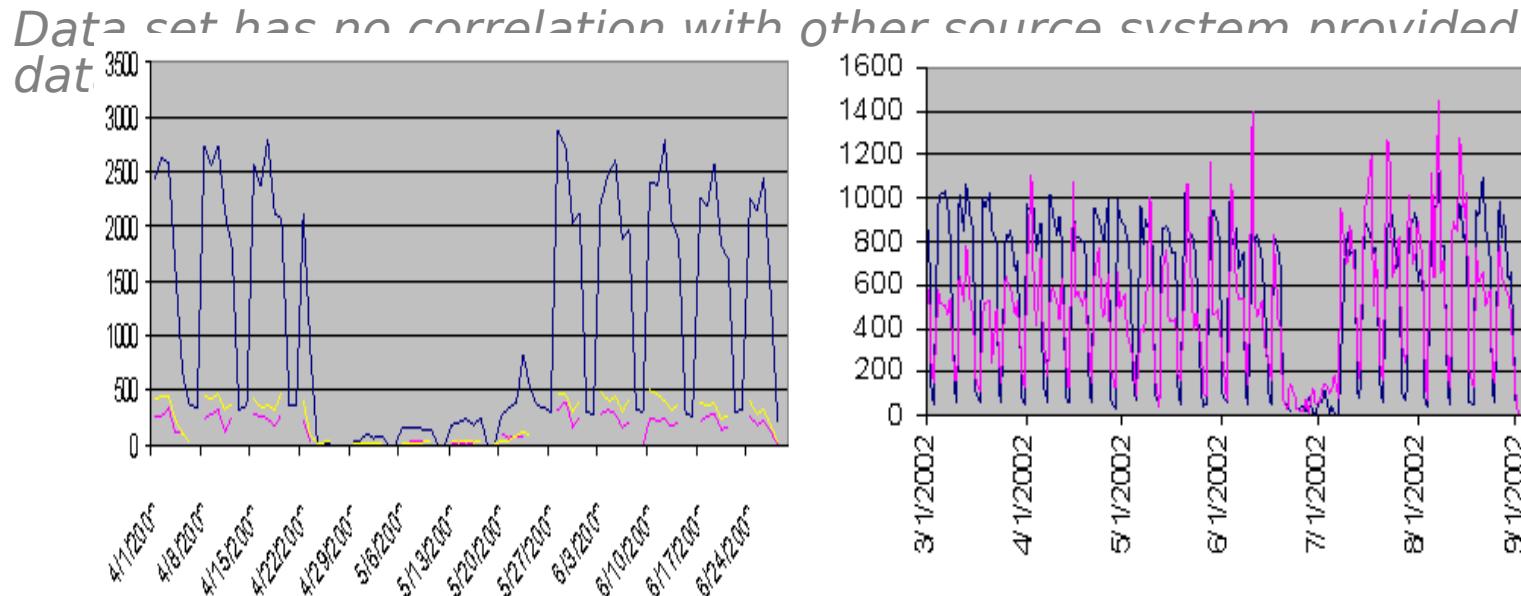
This site was last updated on Wednesday, August 30, 2006.
WARNING: This is a Department of Defense (DoD) Computer System.
POC: webmaster@eids.ha.osd.mil

Data Quality Assurance



Start with Run Charts

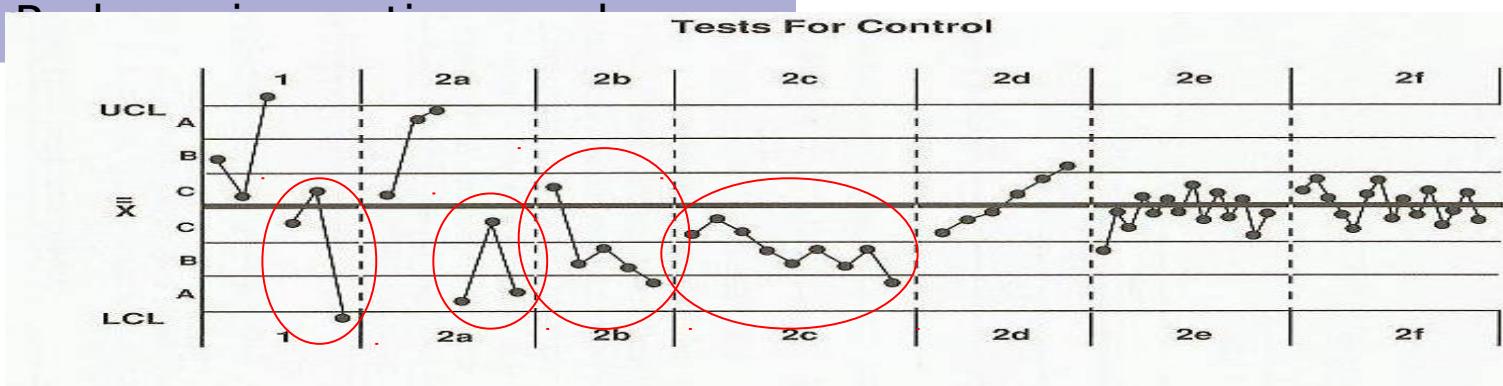
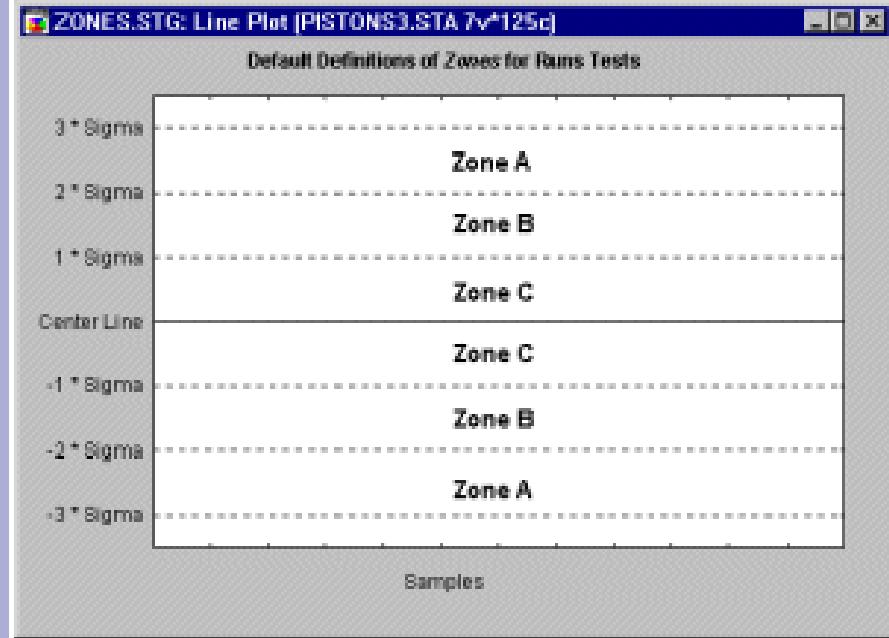
Facilities showing gaps in daily outpatient encounter data receipt. Investigation and data recovery actions required.



Data Completeness Determination

“Completeness” as a Process Control Problem

- Amenable to Statistical\Process Control
- Examine for Special Cause Variation
- Signals when a problem has occurred
- Detects variation
- Allows “Process Characterization”
- Reduces variation



Compare Each Day To Itself

Project previous data to today then compare this projection with newly arrived data.

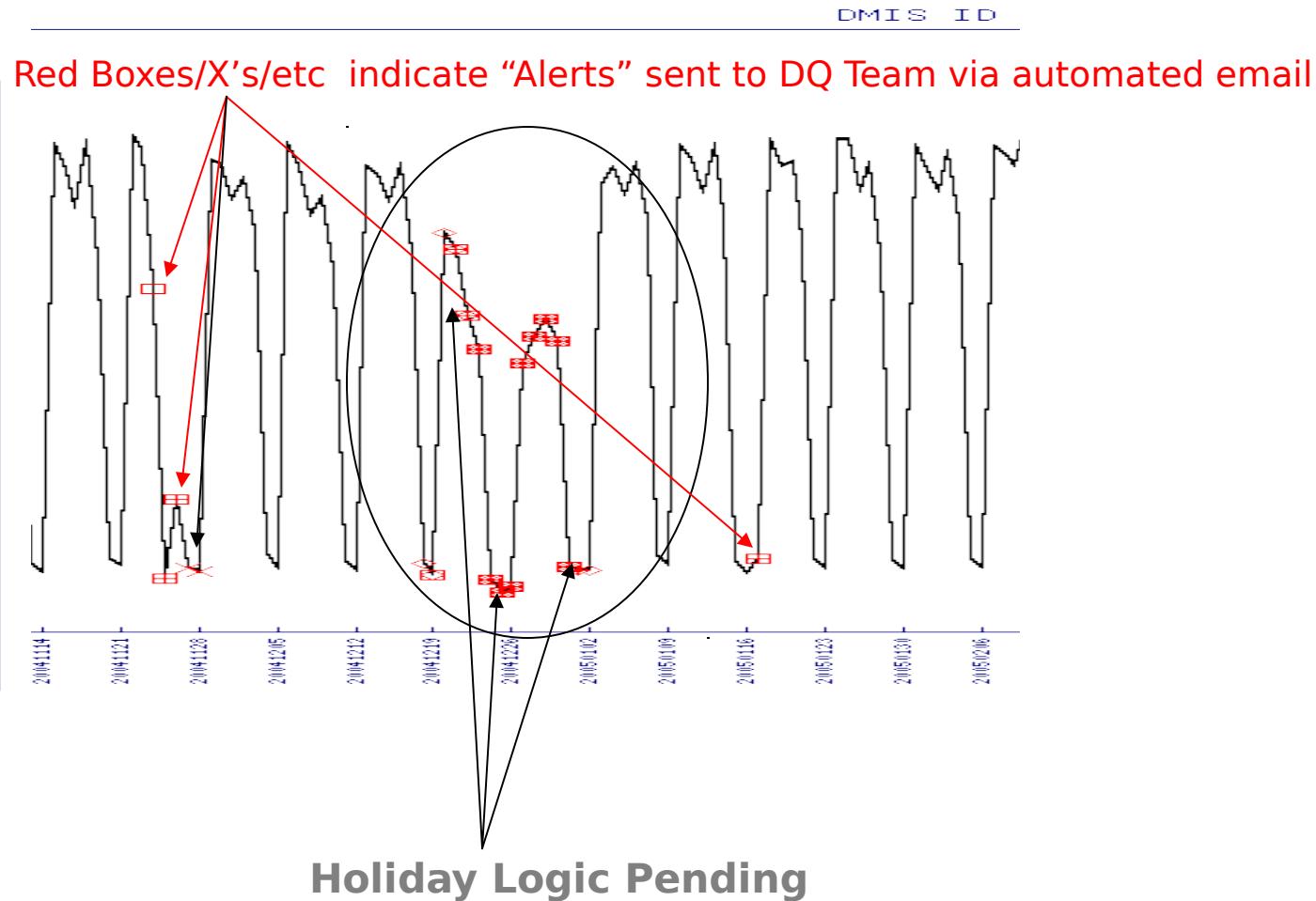


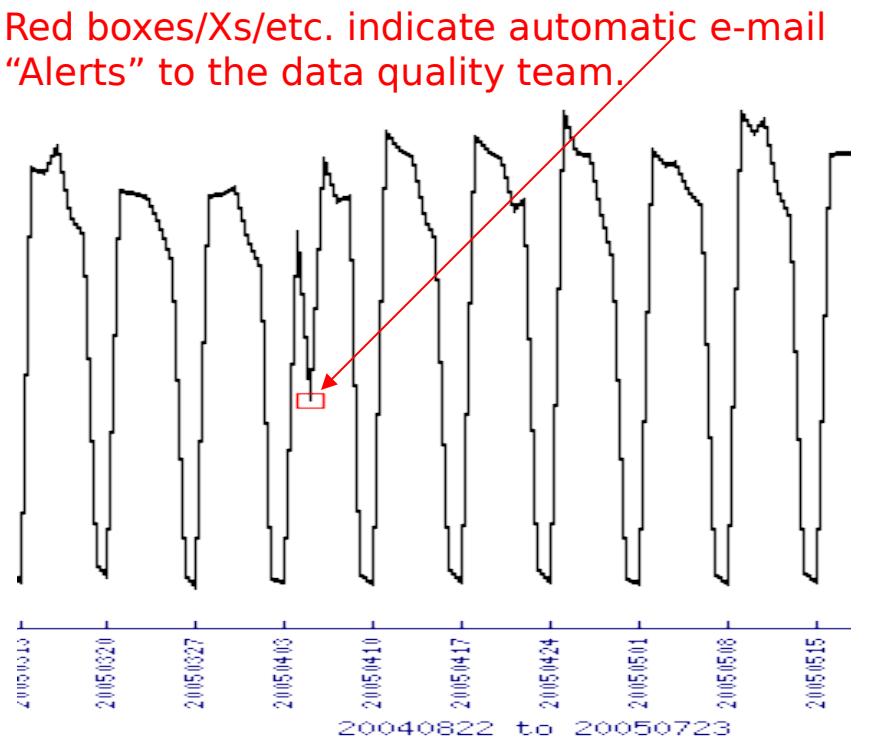
Chart: Encounters by Day

Identifying Data Completeness Problems

Alerting and Notification Issue

How do you identify and present “possible” problems when:

- the “problem” is transient,
- it is one data point in a series,
- it is from one of a vast number of daily input data sources?

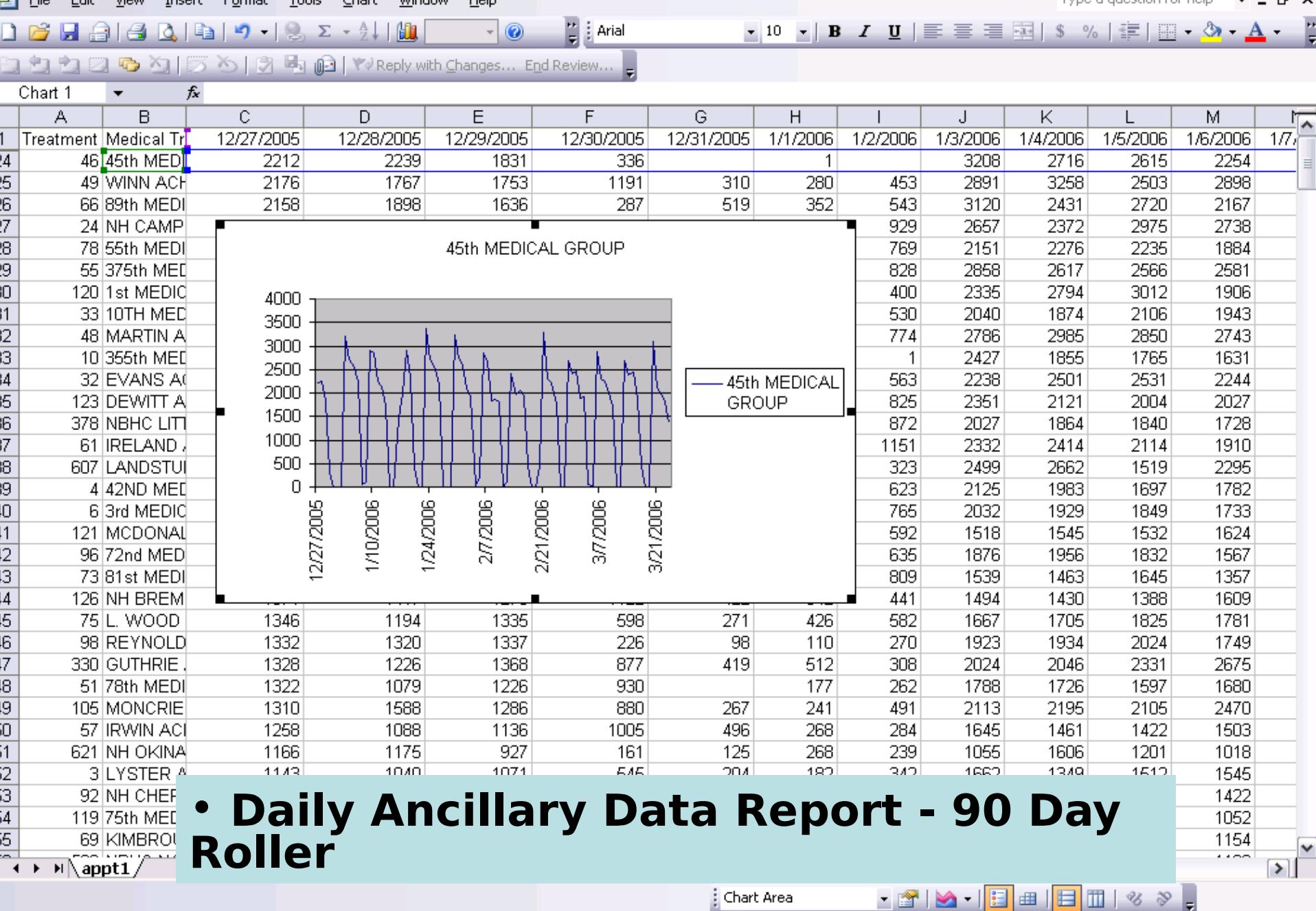


Essentially a projection of previous data forward in time to today then a comparison of this projection with the newly arrived data.

Data Tracker Report Series including:

- **SADR vs Appt. Tracking (a real-time “Hutchinson” Report)**
- **SADR vs Appointment Delta Alerting**

1	B	C	F	G	K	AA Post Processed Appointment Problem Indicator	AQ	BG	BX	B
	DMISID	FACILITY	MONTH		SADR-includes appt inferred		H060109	S060109	W060112	
133	0015	9th MEDICAL GROUP BEALE AFB	Oct-04		3,722		3,624	3,720	3,715	
134	0015	9th MEDICAL GROUP BEALE AFB	Nov-04		3,664		3,586	3,663	3,659	
135	0015	9th MEDICAL GROUP BEALE AFB	Dec-04		3,579		3,495	3,574	3,575	
136	0015	9th MEDICAL GROUP BEALE AFB	Jan-05		4,007		3,902	4,006	3,994	
137	0015	9th MEDICAL GROUP BEALE AFB	Feb-05		3,785		3,686	3,782	3,773	
138	0015	9th MEDICAL GROUP BEALE AFB	Mar-05		4,886		4,743	4,883	4,846	
139	0015	9th MEDICAL GROUP BEALE AFB	Apr-05		4,136	689		4,136	4,123	
140	0015	9th MEDICAL GROUP BEALE AFB	May-05		4,000		3,926	4,000	3,986	
141	0015	9th MEDICAL GROUP BEALE AFB	Jun-05		4,539		4,446	4,539	4,525	
142	0015	9th MEDICAL GROUP BEALE AFB	Jul-05		3,600		2,685	3,598	3,310	
143	0015	9th MEDICAL GROUP BEALE AFB	Aug-05		4,681		4,216	4,672	4,292	
144	0015	9th MEDICAL GROUP BEALE AFB	Sep-05		4,173		3,551	4,163	3,571	
145	015 Total				48,772		42,549	48,736	47,369	
152	0101	20th MEDICAL GROUP SHAW AFB	Oct-04		7,815		6,368	6,050	6,369	
153	0101	20th MEDICAL GROUP SHAW AFB	Nov-04		7,182		5,740	5,278	5,748	
154	0101	20th MEDICAL GROUP SHAW AFB	Dec-04		6,808		5,780	5,416	5,792	
155	0101	20th MEDICAL GROUP SHAW AFB	Jan-05		7,523		6,495	5,863	6,488	
156	0101	20th MEDICAL GROUP SHAW AFB	Feb-05		7,371		5,853	5,050	5,860	
157	0101	20th MEDICAL GROUP SHAW AFB	Mar-05		8,905		7,347	6,279	7,354	
158	0101	20th MEDICAL GROUP SHAW AFB	Apr-05		8,158		6,938	5,775	6,953	
159	0101	20th MEDICAL GROUP SHAW AFB	May-05		7,453		6,121	5,482	5,965	
160	0101	20th MEDICAL GROUP SHAW AFB	Jun-05		7,767		6,249	5,786	6,231	
161	0101	20th MEDICAL GROUP SHAW AFB	Jul-05		6,319		3,415	4,590	3,405	
162	0101	20th MEDICAL GROUP SHAW AFB	Aug-05		8,801		6,085	8,440	6,073	
163	0101	20th MEDICAL GROUP SHAW AFB	Sep-05		7,850	2		7,850	5,687	
164	101 Total				91,952		66,393	71,859	71,925	



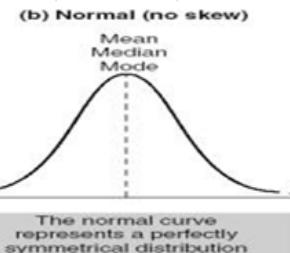
• Daily Ancillary Data Report - 90 Day Roller

Data Quality Tools - “Timeliness”

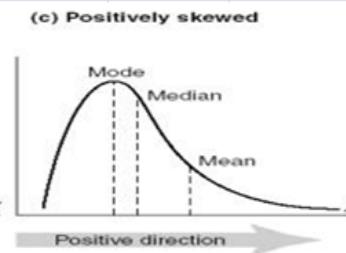
Medical Treatment Facility	N (# of Encounters)	Mean	Standard Deviation
110 DARNALL AMC	169464	2.94	3.82
125 MADIGAN AMC	169193	4.75	6.74
109 BROOKE AMC	155957	4.35	5.38
89 WOMACK AMC	154777	3.47	4.25
117 59th MEDICAL WING	153855	4.76	5.45
29 NMC SAN DIEGO	145880	6.07	7.8
32 EVANS ACH	144485	3.19	4.06
124 NMC PORTSMOUTH	144467	5.15	7.88
37 WALTER REED ARMY MEDICAL CENTE	142962	3.82	5.93
52 TRIPLEX AMC	141958	4.2	4.49
60 BLANCHFIELD ACH	139950	3.09	2.75
47 EISENHOWER AMC	118785	4.12	4.35
67 NNMC BETHESDA	117449	3.92	5.56
98 REYNOLDS ACH	102356	3.01	3.08
61 IRELAND ACH	98378	2.82	2.34
91 NH CAMP LEJEUNE	98277	3.89	6.91
108 WILLIAM BEAUMONT AMC	96737	4.22	5.05
48 MARTIN ACH	89883	2.86	2.27
49 WINN ACH	81377	2.88	2.49
14 60th MEDICAL GROUP	77770	4.44	6.03
75 L. WOOD ACH	73648	2.76	2.45
607 LANDSTUHL REGIONAL MEDCEN	73289	4.09	6.88
24 NH CAMP PENDLETON	73220	3.78	4.96
57 IRWIN ACH	71413	3.02	3.34
123 DEWITT ACH	71154	3.14	3.55
95 88th MEDICAL GROUP	69474	2.69	4.12
6 3rd MEDICAL GROUP	65102	3.7	4.06
330 GUTHRIE AHC	60978	2.83	2.4
42 96th MEDICAL GROUP	59496	3.93	4.17
79 MIKE OCALLAGHAN FEDERAL HOSPITA	58834	3.44	3.77
39 NH JACKSONVILLE	58208	4.18	4.51
64 BAYNE-JONES ACH	56231	2.57	2.89
437 SCHOFIELD BARRACKS AHC	55121	2.49	1.81
120 1st MEDICAL GROUP	54822	3.47	4
73 81st MEDICAL GROUP	52446	2.50	2.66

Site has the most encounters for the time frame. They do well on this metric compared to other large facilities. [Relatively low mean AND standard deviation, recall that 1.0 is the "lowest" obtainable mean, and 2.0 (2 days from encounter to receipt) a more realistic expectation]

What do THEY do, that the others do not? Why is their Standard Deviation more "Bell Curve" like than others?



Since greater Standard Deviation = 's more "Variation", some locations or other factors within the facility must do much better than others.



Microsoft Excel - HL7_WKLY_RPT_06292002

File Edit View Insert Format Tools Data Window Help

Book Antiqua

AG5

US Army Sites

Site ID Medical Treatment Facility

0001 FOX ARMY HEALTH CENTER

0002 NOBLE AHC

0003 LYSTER ACH

0005 BASSETT ACH

0008 R. W. BLISS ARMY HEALTH CENTER

0032 EVANS ACH

0037 WALTER REED ARMY MEDICAL CENTER

0047 EISENHOWER AMC

0048 MARTIN ACH

0049 WINN ACH

0052 TRIPLEX AMC

0057 IRWIN ACH

0058 MUNSON ARMY HEALTH CENTER

0060 BLANCHFIELD ACH

0061 IRELAND ACH

0064 BAYNE-JONES ACH

0075 L. WOOD ACH

0086 KELLER ACH

0089 WOMACK AMC

0098 REYNOLDS ACH

0108 WILLIAM BEAUMONT AMC

0110 DARNALL ACH

0125 MADIGAN AMC

0131 WEED ACH

0330 GUTHRIE AHC

0607 LANDSTUHL REGIONAL MEDCEN

0612 121st GENERAL HOSPITAL

US Navy Sites

0024 NH CAMP PENDLETON

0028 NH LEMOORE

0029 NMC SAN DIEGO

0035 NACC GROTON

0038 NH PENSACOLA

0039 NH JACKSONVILLE

0056 NH GREAT LAKES

0067 NNMC BETHESDA

0091 NH CAMP LEJEUNE

The HL7 Weekly Tracker - Sorted by Service. Posted on the EIDS Web site and updated weekly from the Data Tracker database.

Data Quality Tools - “Delta Detectors”

DMIS	Facility Name	FY	FM	Month	CAPER	SADR	CAPER visits / SADR
0208	BMC MCB CAMP PENDLETON	2008	05	Feb-08	2,291	2,290	100.04%
0208	BMC MCB CAMP PENDLETON	2008	06	Mar-08	2,554	2,316	110.28%
0297	NACC NEW ORLEANS	2003	01	Oct-02	.	2,140	0.00%
0297	NACC NEW ORLEANS	2003	02	Nov-02	.	1,999	0.00%
0297	NACC NEW ORLEANS	2003	03	Dec-02	.	1,978	0.00%
0297	NACC NEW ORLEANS	2003	04	Jan-03	.	2,281	0.00%
0297	NACC NEW ORLEANS	2003	05	Feb-03	.	2,114	0.00%
0297	NACC NEW ORLEANS	2003	06	Mar-03	.	2,134	0.00%
0297	NACC NEW ORLEANS	2003	07	Apr-03	.	2,300	0.00%
0297	NACC NEW ORLEANS	2003	08	May-03	.	2,271	0.00%
0297	NACC NEW ORLEANS	2003	09	Jun-03	.	2,192	0.00%
0297	NACC NEW ORLEANS	2003	10	Jul-03	.	1,964	0.00%
0297	NACC NEW ORLEANS	2003	11	Aug-03	.	1,704	0.00%
0297	NACC NEW ORLEANS	2003	12	Sep-03	.	1,715	0.00%
0297	NACC NEW ORLEANS	2004	01	Oct-03	.	1,621	0.00%
0297	NACC NEW ORLEANS	2004	02	Nov-03	.	1,106	0.00%
0297	NACC NEW ORLEANS	2004	03	Dec-03	.	1,658	0.00%
0297	NACC NEW ORLEANS	2004	04	Jan-04	.	1,497	0.00%
0297	NACC NEW ORLEANS	2004	05	Feb-04	.	1,315	0.00%
0297	NACC NEW ORLEANS	2004	06	Mar-04	.	1,417	0.00%
0297	NACC NEW ORLEANS	2004	07	Apr-04	23	1,329	1.73%
0297	NACC NEW ORLEANS	2004	08	May-04	1,095	1,099	99.64%
0297	NACC NEW ORLEANS	2004	09	Jun-04	1,184	1,184	100.00%
0297	NACC NEW ORLEANS	2004	10	Jul-04	1,116	1,116	100.00%
0297	NACC NEW ORLEANS	2004	11	Aug-04	1,116	1,089	102.48%
0297	NACC NEW ORLEANS	2004	12	Sep-04	860	860	100.00%
0297	NACC NEW ORLEANS	2005	01	Oct-04	1,206	1,206	100.00%
0297	NACC NEW ORLEANS	2005	02	Nov-04	1,157	1,158	99.91%
0297	NACC NEW ORLEANS	2005	03	Dec-04	981	986	99.49%
0297	NACC NEW ORLEANS	2005	04	Jan-05	1,156	1,158	99.83%
0297	NACC NEW ORLEANS	2005	05	Feb-05	981	983	99.80%
0297	NACC NEW ORLEANS	2005	06	Mar-05	1,113	1,113	100.00%

Data Quality Tools - “Delta Detectors”

2008	Week of Year:												Day of week														
	Tmt	Par	Tmt	Parent	DMIS	ID	Name	Day of week	40	41	42	43	44	45	46	47	48	49	50	51	52	1	2	3	4	5	6
0029	NMC	SAN	DIEGO			3	601	198	212	70	250	205	230	207	186	182	189	188	1	3	198	381	205	288	209	282	2
0029	NMC	SAN	DIEGO			4	288	139	332	135	207	225	175	150	250	206	212	184	101	164	221	219	221	256	238	191	2
0029	NMC	SAN	DIEGO			5	210	168	150	169	137	191	154		183	134	139	125	110	180	212	178	195	160	223	154	2
0029	NMC	SAN	DIEGO			6	186	94	106	94	142	117	154	128	122	136	164	148	86	148	138	148	182	166	192	138	1
0029	NMC	SAN	DIEGO			7	25	4	6	13	43	6	4	3	3	19	74	8	8	3	9	6	6	7	4	9	
0030	NH	TWENTYNINE	PALMS			1	4																			1	
0030	NH	TWENTYNINE	PALMS			2	88		31	22	18	16			30	24	33	27	13				28	34	11	20	34
0030	NH	TWENTYNINE	PALMS			3	96	22	24	13	16	14	1	29	27	32	26	3				20	38	23	12	29	35
0030	NH	TWENTYNINE	PALMS			4	28	28	28	23	22	29	24	48	27	40	39	20	20	20	23	25	19	12	17	22	
0030	NH	TWENTYNINE	PALMS			5	37	31	27	25	23	28	32		27	28	6	22	2	21	26	38	26	11	17	61	
0030	NH	TWENTYNINE	PALMS			6	19	27	22	13	21	15	8		43	21	6	14	9	12	15	18	26	15	13	13	
0030	NH	TWENTYNINE	PALMS			7	1			1								2	1							2	
0032	EVANS	ACH-FT.	CARSON			1	1						1										1			2	
0032	EVANS	ACH-FT.	CARSON			2	48	1	25	22	20	27	2	27	26	31	33	41	2			54	77	34	30	34	
0032	EVANS	ACH-FT.	CARSON			3	60	21	27	19	30	26	23	11	23	28	25	34				42	48	32	44	64	55
0032	EVANS	ACH-FT.	CARSON			4	25	23	21	27	24	37	19	17	28	20	34	23	48	43	39	36	32	30	54	41	
0032	EVANS	ACH-FT.	CARSON			5	20	21	19	7	22	29	18		22	20	69	20	37	47	42	42	31	39	56	37	
0032	EVANS	ACH-FT.	CARSON			6	22	19	19	23	16	13	14		15	16	23	10	46	36	38	30	28	41	33	24	
0032	EVANS	ACH-FT.	CARSON			7	1			1				1	1	1	1	1	1	1	1	1				1	
0033	10TH	MED	GROUP-USAF	ACADEMY		1																				2	
0033	10TH	MED	GROUP-USAF	ACADEMY		2	23		10	13	9	8		11	10	10	10	5			13	11	1	9	10	5	
0033	10TH	MED	GROUP-USAF	ACADEMY		3	19	6	5	11	8	10	7	6	11	8	3	3			7	12	7	9	10	12	
0033	10TH	MED	GROUP-USAF	ACADEMY		4	11	6	9	9	9	9	12	7	6	10	10	9	4	8	8	6	5	10	8	7	
0033	10TH	MED	GROUP-USAF	ACADEMY		5	7	6	7	8	6	7	12		11	2	1	12	5	11	7	7	4	10	3	10	
0033	10TH	MED	GROUP-USAF	ACADEMY		6	2	4	8	2	6	3	4		9	7	5	8	4	11	6	4		10	12	6	
0033	10TH	MED	GROUP-USAF	ACADEMY		7																				1	
0036	436TH	MED	GRP-DOVER			2	1																			3	
0036	436TH	MED	GRP-DOVER			3	38																			1	
0036	436TH	MED	GRP-DOVER			4			1							5										1	
0036	436TH	MED	GRP-DOVER			5			2																	1	
0036	436TH	MED	GRP-DOVER			6			1	1	1															1	
0036	436TH	MED	GRP-DOVER			7				8																3	
0037	WALTER	REED	AMC-WASHINGTON			1	3	1	7	4	3	11	1	1	1	2	6	4				2	11	4			
0037	WALTER	REED	AMC-WASHINGTON			2	288	2	218	121	160	119	4	184	138	160	122	128	2			146	144	1	154	95	145
0037	WALTER	REED	AMC-WASHINGTON			3	298	142	311	190	136	109	148	132	148	182	178	159	2	2		136	196	128	163	148	124
0037	WALTER	REED	AMC-WASHINGTON			4	144	113	302	170	138	155	155	164	147	108	124	120	62	120	134	162	150	128	100	107	
0037	WALTER	REED	AMC-WASHINGTON			5	109	120	212	129	126	162	126	1	150	58	137	102	44	87	92	136	107	110	104	86	
0037	WALTER	REED	AMC-WASHINGTON			6	82	119	213	119	104	132	113	2	124	132	82	60	62	83	104	90	108	88	117	87	
0037	WALTER	REED	AMC-WASHINGTON			7	3	2	7	2	3	3	6	1	6	10	1			2	4	11	5	2	25		
0038	NH	PENSACOLA				1																				1	
0038	NH	PENSACOLA				2	40		5	11	7	6	1	31	16	148	16	11			24	27		23	15	9	
0038	NH	PENSACOLA				3	26	5	15	11	11	4	0	16	24	78	21	14	1		20	43	28	21	22	15	

These numbers represent the difference between kept appointments and SADRs received by DHSS

Data Quality Tools – “Delta Detectors”

DMISID	FACILITY	FY	FM	MONTH	Appr Inferred		Raw SADR	RAW SADR - % Less than Inferred	Ext Consistency raw SADR as % of Same Month WWR	WWR
					AApr08	SApr08				
0037	WALTER REED ARMY MEDICAL	2007	02	Nov-06	72,681	70,099		96%	109.74%	63,880
0037	WALTER REED ARMY MEDICAL	2007	03	Dec-06	62,404	60,369		97%	110.57%	54,600
0037	WALTER REED ARMY MEDICAL	2007	04	Jan-07	73,535	71,146		97%	110.88%	64,163
0037	WALTER REED ARMY MEDICAL	2007	05	Feb-07	59,960	57,825		96%	109.53%	52,794
0037	WALTER REED ARMY MEDICAL	2007	06	Mar-07	72,419	69,961		97%	108.13%	64,700
0037	WALTER REED ARMY MEDICAL	2007	07	Apr-07	69,736	67,207		96%	111.18%	60,449
0037	WALTER REED ARMY MEDICAL	2007	08	May-07	73,889	71,046		96%	113.68%	62,496
0037	WALTER REED ARMY MEDICAL	2007	09	Jun-07	69,011	65,868		95%	114.19%	57,684
0037	WALTER REED ARMY MEDICAL	2007	10	Jul-07	64,747	62,396		96%	110.16%	56,640
0037	WALTER REED ARMY MEDICAL	2007	11	Aug-07	69,316	66,869		96%	117.63%	56,848
0037	WALTER REED ARMY MEDICAL	2007	12	Sep-07	62,279	58,674		94%	125.49%	46,756
0037	WALTER REED ARMY MEDICAL	2008	01	Oct-07	78,299	73,914		94%	123.55%	59,824
0037	WALTER REED ARMY MEDICAL	2008	02	Nov-07	69,506	66,624		96%	119.48%	55,761
0037	WALTER REED ARMY MEDICAL	2008	03	Dec-07	57,473	54,954		96%	118.20%	46,491
0037	WALTER REED ARMY MEDICAL	2008	04	Jan-08	75,470	62,533		83%	99.77%	62,679
0037	WALTER REED ARMY MEDICAL	2008	05	Feb-08	68,328	65,453		96%	117.01%	55,939
0037	WALTER REED ARMY MEDICAL	2008	06	Mar-08	62,227	62,227		100%	105.35%	59,066

Data Quality Tools - “Interface Monitoring”

Map of CHCS Sending Facilities to EIDS Operations Site ID and DMIS ID				Msg Receipts at EIDS - March 2008 - By Sending Application								
CHCS Sending Facility	EIDS Ops Site	ID	DMIS ID	Medical Treatment Facility	Service	IV	LAB AP	LAB CH	LAB MI	MED	RAD	RX
A1411	0110	0110	0110	DARNALL AHC-FT HOOD	A	Y	Y	Y	Y	Y	Y	Y
HP0125	0125	0125	0125	MADIGAN AMC-FT. LEWIS	A	Y	Y	Y	Y	Y	Y	Y
A1631	0131	0131	0131	WEED AHC-FT. IRWIN	A	Y	Y	Y	Y	Y	Y	Y
HP0330	0330	0330	0330	GUTHRIE AHC-FT. DRUM	A	N	Y	Y	Y	N	Y	Y
HP0607	0607	0607	0607	LANDSTUHL REGIONAL MEDCEN	A	Y	Y	Y	Y	Y	Y	Y
A0611	0612	0612	0612	121st GEN HOSP-SEOUL	A	Y	Y	Y	Y	Y	Y	Y
N68084	0024	0024	0024	NHC CAMP PENDLETON	N	Y	Y	Y	Y	Y	Y	Y
N66095	0028	0028	0028	NMC MOORE	N	Y	Y	Y	Y	Y	Y	Y
N00253	0023	0023	0023	NMC SAN DIEGO	N	Y	Y	Y	Y	Y	Y	Y
HP0035	0035	0035	0035	NACC SPOTON	N	Y	Y	Y	Y	N	Y	Y
N00203	0038	0038	0038	NH PENSACOLA	N	Missing 14-23 Mar	Missing 14-23 Mar	Missing 14-23 Mar	Missing 14-23 Mar	Missing 14-23 Mar	Missing 14-23 Mar	Missing 14-23 Mar
N68032	0033	0033	0033	NH JACKSONVILLE	N	Y	Y	Y	Y	N	Y	Y
N00211	0056	0056	0056	NH GREATER LAKES	N	N	Y	Y	Y	N	Y	Y
HP0031	0001	0001	0001	NH CLAMP LEJUEUNE	N	Y	Y	Y	Y	Y	Y	Y
N68084	0103	0103	0103	NH CHARLESTON	N	Y	Y	Y	Y	Y	Y	Y
N00118	0118	0118	0118	NH CORPUS CHRISTI	N	N	Y	Y	Y	N	Y	Y
N00183	0124	0124	0124	NMC PORTSMOUTH	N	Y	Y	Y	Y	Y	Y	Y
HP0615	0615	0615	0615	NH GUANTANAMO BAY	N	Y	Y	Y	Y	Y	Y	Y
HP0616	0616	0616	0616	NH ROOSEVELT ROADS-CEIBA	N	N	N	N	N	N	N	Y
N68096	0617	0617	0617	NH NAPLES	N	Y	Y	Y	Y	Y	Y	Y
HP0618	0618	0618	0618	NH ROTA	N	Y	Y	Y	Y	Y	Y	Y
N68096	0620	0620	0620	NH GUAM-AGANA	N	Y	Y	Y	Y	Y	Y	Y
N68470	0621	0621	0621	NH OKINAWA	N	Y	Y	Y	Y	Y	Y	Y
HP0622	0622	0622	0622	NH YOKOSUKA	N	Y	Y	Y	Y	Y	Y	Y
N68375	0623	0623	0623	NH KEFLAVIK	N	N	N	N	N	N	N	Y
N39163	0624	0624	0624	NH SIGONELLA	N	Y	Y	Y	Y	Y	Y	Y
HP1170	1170	1170	1170	BMC NSA BAHRAIN	N	N	Y	Y	Y	N	Y	Y
F0165	0004	0004	42nd MEDICAL GROUP-MAXWELL	F	N	Y	Y	Y	Y	N	Y	Y
F0252	0006	0006	3rd MED GRP-ELMENDORF	F	Y	Y	Y	Y	Y	Y	Y	Y
F0452	0009	0009	56th MED GRP-LIKE	F	N	Y	Y	Y	Y	N	Y	Y
F0451	0010	0010	355th MED GRP-DAVIS MONTBAN	F	N	Y	Y	Y	Y	N	Y	Y
F0553	0013	0013	314th MED GRP-LITTLE ROCK	F	N	Y	Y	Y	Y	N	Y	Y
HP0014	0014	0014	60th MED GRP-TRAVIS	F	Y	Y	Y	Y	Y	Y	Y	Y
F0670	0018	0018	30th MED GRP-VANDEBERG	F	N	Y	Y	Y	Y	N	Y	Y
F0654	0019	0019	95th MED GRP-EDWARDS	F	N	Y	Y	Y	Y	N	Y	Y
F1051	0036	0036	436th MED GRP-DOVER	F	N	Y	Y	Y	Y	N	Y	Y
HP0042	0042	0042	98th MED GRP-EGLIN	F	Missing 1-28 Mar	Missing 1-28 Mar	Missing 1-28 Mar	Missing 1-28 Mar	Missing 1-28 Mar	Missing 1-28 Mar	Missing 1-28 Mar	
HP0043	0043	0043	325th MED GRP-TYNDALL	F	N	Y	Y	Y	Y	N	Y	Y
HP0045	0045	0045	6th MED GRP-MACDOILL	F	Y	Y	Y	Y	Y	Y	Y	Y
F1256	0046	0046	45th MED GRP-PATRICK	F	N	Y	Y	Y	Y	N	Y	Y
F1355	0050	0050	347th MED GRP-MOODY	F	N	Missing 1-6 Mar	Missing 1-6 Mar	Missing 1-6 Mar	N	Missing 1-6 Mar	Missing 1-6 Mar	
F1356	0051	0051	78th MED GRP-ROBINS	F	N	Y	Y	Y	Y	N	Y	Y
F1651	0053	0053	368th MED GRP-MOUNTAIN HOME	F	Y	Y	Y	Y	Y	Y	Y	Y
HP0055	0055	0055	325th MED GRP-SCOTT	F	N	Y	Y	Y	Y	N	Y	Y
F2057	0059	0059	22nd MED GRP-MCCONNELL	F	N	Y	Y	Y	Y	N	Y	Y
HP0062	0062	0062	2nd MED GRP-BARKSDALE	F	N	Y	Y	Y	Y	N	Y	Y
F2853	0073	0073	81st MED GRP-KEESLER	F	Y	Y	Y	Y	Y	Y	Y	Y
F2851	0074	0074	14th MED GRP-COLUMBUS	F	N	Y	Y	Y	Y	N	Y	Y
F2954	0076	0076	509th MED GRP-WHITEMAN	F	N	Y	Y	Y	Y	N	Y	Y
F3051	0077	0077	341st MED GRP-MAJLSTROM	F	N	Missing 4 Mar only	Missing 4 Mar only	Missing 4 Mar only	N	Missing 4 Mar only	Missing 4 Mar only	
HP0078	0078	0078	55th MED GRP-OFFUTT	F	Y	Y	Y	Y	N	Y	Y	Y
F3251	0079	0079	99th MED GRP-O'CALLAGHAN HOSP	F	Y	Y	Y	Y	Y	Y	Y	Y
F3552	0083	0083	377th MED GRP-KIRTLAND	F	N	N	N	N	N	N	N	Y
HP0084	0084	0084	49th MED GRP-HOLLOMAN	F	N	Y	Y	Y	N	Y	Y	Y
F3554	0085	0085	27th MED GRP-CANNON	F	N	Y	Y	Y	N	Y	Y	Y
FJ456	0639	0639	35th MED GRP-MISAWA	F	Y	Y	Y	Y	Y	Y	Y	Y
F1T52	0808	0808	31st MED GRP-AVIANO	F	Y	Y	Y	Y	Y	Y	Y	Y
HP0130	aka	0130	USCG CLINIC KODIAK, AK	C	N	Y	Y	Y	N	N	N	Y
HP0416	cen	0416	MOBILE USCG CLINIC	C	N	Y	Y	Y	N	N	Y	Y
HP0428	eas	0428	CAPE MAY COAST GUARD CLINIC	C	N	Y	Y	Y	N	N	N	Y
HP7043	hia	7043	HONOLULU COAST GUARD CLINIC	C	Test Site	Test Site	Test Site	Test Site	Test Site	Test Site	Test Site	
HP0067	ncac	0067	NNMC BETHESDA, MD	N	Y	Y	Y	Y	Y	Y	Y	
HP0418	pac	0418	ALAMEDA COAST GUARD CLINIC	C	N	N	Y	Y	N	N	Y	
HP7042	pra	7042	BORINQEN COAST GUARD CLINIC	C	N	N	Y	Y	N	N	Y	

Data Quality Processes

Problem Determination Proc

“File Level” Gaps

- Automated Process
 - e.g. Nothing received as of date or duration
- SADR Example
 - Nothing received in 3 days - Email Alert)

Note Files contain data from many encounter dates. **Files may be received daily, but these files may not correlate with CURRENT data]**

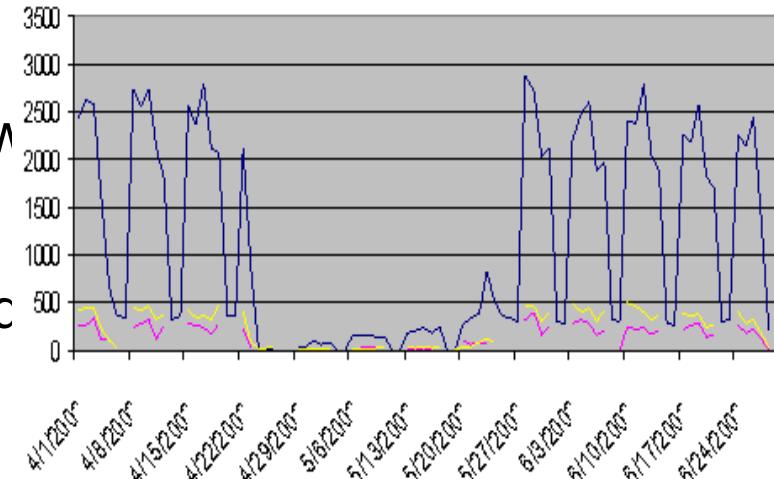
“Encounter Date” Analysis

- Monthly and ad hoc manual review
- e.g. Run Charts
- NOTE: SPC Control Charts are designed to provide an automated means to perform this activity)

From: admtrak.edwn11_sw@iris.den.disa.mil [mailto:admtrak.edwn11_sw@iris.den.disa.mil]
Sent: Monday, July 30, 2007 11:08 AM
Subject: SADR GAPs

SADR Gaps on 07/29/2007 as of 07/30/2007

Site ID,	Medical Treatment Facility,	Days Missing,	Host,
KAFB0038,	NH PENSACOLA,	4,	edwn35_sw,
KAFB0073,	81st MEDICAL GROUP,	4,	edwn35_sw,
KAFB0316,	NBHC GULFPORT,	4,	edwn35_sw,
KAFB0436,	KGADS,NBHC NAS BELLE CHASE,	4,	edwn35_sw,
KAFB0654,	KGADS,NBHC PASCAGOULA,	4,	edwn35_sw,
KAFB1990,	KGADS,BMC NAVSUPPACT EBANK,	4,	edwn35_sw,



Notices of “Non Receipt” Grail

The Holy

	1/28/2010	1/28/2010	1/29/2010	1/29/2010	1/30/2010	2/4/2010	2/4/2010	2/5/2010	2/5/2010	2/6/2010	2/14/2010	2/15/2010	2/15/2010	2/16/2010	2/16/2010	2/17/2010	2/17/2010	2/18/2010	2/18/2010	2/18/2010
Medical Treatment Facility	Files	Records	Files	Records	Files	Records	Files	Records	Files	Records	Files	Records	Files	Records	Files	Records	Files	Records	Files	Records
LYSTER AHC	1	1049	1	862	1	1	1000	1	803	1										
14th MEDICAL GROUP	1	168	1	177	1	1	140	1	230	1	24	1	19							
BASSETT AHC	1	1190	1	1109	1	1	936	1	1298	1	245	1	340							
FT. GREELY AHC	1	1	1	1	1	1	8	1	22	1	1	1	1							
354th MEDICAL GROUP	1	156	1	177	1	1	153	1	152	1	1	1	1							
FAIRBANKS MEMORIAL HOSPITAL (1	1	1	1	1	1	1	1	1	1	1	1	1							
COMBINED MEDICAL SVCS CLIN-FT.	1	114	1	120	1	1	109	1	176	1	7	1	10							
KAMISH CLINIC-FT. WAINWRIGHT	1	147	1	127	1	1	163	1	192	1	1	1	1							
97th MEDICAL GROUP	1	69	1	5	1			2	2	1	1	1	25	1	197	1	170	1	279	
EVANS ACH	1	6711	1	4775	1	1	5106		2	277	1	333	1	4974	1	5720	1	7148		
10TH MEDICAL GROUP	1	1644	1	1244	1	1	1326		2	76	1	83	1	1251	1	1516	1	1646		
21st MEDICAL GROUP	1	403	1	538	1	1	943		2	37	1	27	1	717	1	778	1	900		
CIV EMP HLTH CLINIC-PUEBLO	1	9	1	21	1	1	18		2	1	1	1	1	13	1	14	1	15		
PREMIER ARMY HEALTH CLINIC	1	292	1	185	1	1	213		2	1	1	19	1	229	1	199	1	262		
460th MED GRP-BUCKLEY AFB	1	498	1	173	1	1	327		2	1	1	1	1	473	1	543	1	356		
TMC 10-FT. CARSON	1	478	1	378	1	1	172		2	2	1	14	1	217	1	188	1	278		
TMC 9-FT. CARSON	1	462	1	324	1	1	256		2	3	1	12	1	310	1	314	1	329		
WARRIOR CLINIC-FT. CARSON	1	472	1	316	1	1	254		2	2	1	3	1	266	1	281	1	363		

List of Problem Facilities - AUTOMATED IDENTIFICATION USING STATISTICAL PROCESS CONTROL ALGORITHMS

Human Interpretation: 2 files after one day gap and volume appears consistent with prior "same days"

STATISTICAL PROCESS CONTROL - Determines that volume for X days is NOT consistent with prior data

SPC AND File Absence Alerting

Data Quality Processes

A set of three horizontal arrows: a black double-headed arrow at the top, a red double-headed arrow in the middle, and a black double-headed arrow at the bottom.

Problem Resolution Process : IF “file level” OR “encounter date level” problem detected:

- Immediate MHS Help Desk Ticket
- Notification if problem is deemed “significant and or long standing”
- Determination if “Blaster” message to analytical community is appropriate or required. Note that individual site “transient” halts in transmission occur regularly and are usually resolved quickly. These “transient” problems are not reported in real time as M2 utilizes a batch process and problems are often resolved between batch processing cycles.
- Coordination with “Service POCs” to determine if problem also exists in “Service” databases.
- Recovery of files via sharing between service databases and DHSS
- Tier III recovery/reharvest of missing data (except HL7 and Ancillary as no reharvest mechanism exists)

Data Quality Processes



A decorative element consisting of two horizontal lines with arrows at the ends. The top line is a thin grey line with a small black arrow at each end. The bottom line is a thicker grey line with a small black arrow at each end, positioned slightly below the top line.

Common Problems - In Order of Occurrence

4 Broad Categories

- Provider/Coding Issues
 - “Slow Coding” for the data receipt perspective
 - Provider “left”
- Transmission/Send of Data
 - Sy_ETU Problems
 - Host Issues (e.g. Change Package induced problems)
- Network Routing Issues
- Ingest or Processing

Data Quality Tools



Partial List of Standard Reports from the EIDS Web Portal Data Tracker Database

- **HL7 tracking:** Displays a tabular view of file submission history for each HL7 site.
- **SADR gaps:** Displays a list of sites, by ADS version, that did not report data for at least a fixed number of days
- **SADR lags:** Displays the mean and standard deviation of the reporting lag for each site, by ADS version.
- **SADR scores:** Displays a SADR transmission completeness report. For each site, by ADS version, a completion percentage is listed. assumed.
- **SADR tracking:** A tabular view of file and record submission history for each site, by ADS version. Each column corresponds to a file date.
- **SADR treatment DMIS ID gaps:** Displays a list of treatment DMIS IDs that did not report data for at least a fixed number of days.
- **SADR treatment DMIS ID scores:** A SADR transmission completeness report. For each treatment DMIS ID, a completion percentage is listed.
- **SADR treatment DMIS ID tracking:** Displays a tabular view of record submission history for each treatment DMIS ID.
- **SADR treatment DMIS ID (by visit type) tracking:** Displays a tabular view of record submission history for each treatment DMIS ID. The displayed counts indicate the number of unique SADR data records, determined by appointment prefix and appointment identifier number.
- **SIDR gaps:** A list of reporting sites that did not report data for a fixed number of SIDR months, up to and including the ending SIDR month
- **SIDR tracking:** Displays a tabular view of file and record submission history for each reporting site.
- **SIDR treatment DMIS ID tracking:** Displays a tabular view of SIDR completion history for each treatment DMIS ID

Data Quality Tools (continued)



- **GCPR sites:** Displays a list of GCPR sites by Service, region, and DMIS ID, allowing the user to review the mapping of GCPR sites to DMIS IDs.
- **GCPR tracking:** Displays a tabular view of file submission history for each GCPR site. Each column corresponds to a date within the range specified.
- **HL7 gap:** Displays a list of sites that did not report data for at least a fixed number of days, as specified by the user query.
- **PDTS gap:** Displays a line if PDTS data has not been reported for at least a fixed number of days, as specified by the user query.
- **PDTS tracking:** Displays a tabular view of file submission history for PDTS. Each column corresponds to a file date within the range specified.
- **Ancillary Tracking:** Displays a tabular view of file and record submission history for each reporting DMIS ID. Each column corresponds to a file date within the selected range.
- **Ancillary Gap:** Displays a list of reporting DMIS IDs, that did not report data for at least a fixed number of days.
- **Ancillary treatment DMIS ID Tracking:** Displays a tabular view of record submission history for each ancillary performing DMIS ID. Each column corresponds to a service date within the range specified. The displayed counts indicate the number of unique ancillary data records, as determined by the accession number for laboratory, exam number for radiology, and prescription number for pharmacy.
- **Ancillary treatment DMIS ID Gap:** Displays a list of performing DMIS IDs that did not report data for at least a fixed number of days, as specified by days, up to and including the ending service date, as specified.
- **Appointment treatment DMIS ID Tracking:** Displays a tabular view of record submission history for each appointment treatment DMIS ID. Each column corresponds to an appointment date within the inclusive range specified by the beginning appointment date, bgndate, and the ending appointment date, enddate. The displayed counts indicate the number of unique appointment data records, as determined by the appointment identifier number and the node seed name.
- **Appointment treatment DMIS ID Gap:** Displays a list of treatment DMIS IDs that did not report data for

Data Quality Tools



Allow DHSS to

Catalog data files

Monitor data completeness

Provide metrics to assess data quality/completeness of data received

Design, develop and maintain data quality software

The Key To Data Quality Success



A set of three horizontal arrows: a thin black arrow pointing left, a thick red arrow pointing right, and a thin black arrow pointing right.

Partnering with our users to
maximize information
sharing

Questions?